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Exhibit R-2, RDT&E Budget Item Justification						Date: FEBRUARY 1999				
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N/B. A. 5						R-1 ITEM NOMENCLATURE Program Element (PE) Name and No.: Navy Tactical Computer Resources 0604574N				

COST (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total P.E. Cost	31.582	28.059	3.300	3.454	4.148	4.170	4.338	4.586	CONT.	CONT.
STANDARD HARDWARE/21353	29.945	1.964	2.297	2.424	3.074	2.947	3.084	3.154	CONT.	CONT.
UYQ-70 DISPLAY IMPROVEMENTS/22647	0	14.965	0	0	0	0	0	0	14.965	14.965
COMPUTER AIDED DEAD RECKONING TRACER/22648	0	4.989	0	0	0	0	0	0	4.989	4.989
AN/AYK-14/W0845*	1.101	4.971	0	0	0	0	0	0	0	28.372
NWTDB/X2265	.536	1.170	1.003	1.030	1.074	1.223	1.254	1.432	CONT.	CONT.
Quantity of RDT&E Articles & cost	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
*Project Unit W0845 is combined with P.E. 0604215N, Project Unit W0572 beginning FY-00										

A. Mission Description and Budget Item Justification: The Standard Hardware project in combination with UYQ-70 Display Improvements will perform the system engineering necessary to verify Commercial-off-the-Shelf/Open System Architecture (COTS/OSA) technologies and products as suitable for introduction into the AN/UYQ-70(V) Advanced Display System product line. The Computer Aided Dead Reckoning Tracer (CADRT) will automate the management plotting team and information distribution function currently performed manually, allowing automatic evaluation and processing of input data to generate real-time, multi-source integrated tactical data which is used to create a tactical picture to support the decision process. qThe Naval Warfare Tactical Data Base (NWTDB) is an information management infrastructure project to solve data interoperability problems and implement DoD data architecture and standards in Navy. NWTDB is the data architecture component of Copernicus. NWTDB has developed management and engineering processes to define and translate information needs to automated systems, and to manage changes resulting from new operational requirements or technology advances.

B. Program Change Summary:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
FY 1999 President's Budget:	33.862	8.249	13.441
Appropriated Value:	35.294	28.249	
Adjustment to FY 1998/1999 Appropriated Value/	-3.712	-.190	-10.141
FY 1999 President's Budget:			
FY 2000/01 PRES Budget Submit:	31.582	28.059	3.300

Funding: FY-98 funding adjustments due to SBIR reduction (-\$0.933), Contract Advisory and Assistance Services (-\$0.085), BTR Update/Issue (-\$1.630), DD1002 (-\$0.015), Economic Assumptions (-\$0.078), General Reductions (-\$0.971).

FY-99 funding adjustments due to Contract Advisory and Assistance Services (-\$0.117), Economic Assumptions (-\$0.066), Civilian personnel underexecution (-\$0.007)

FY-00 funding adjustments due to C2 Systems Program Offsets for IT-21 (-\$0.064), Zero Sum- Advanced MSN Computer functional transfer (-\$9.803),

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IT-21 shortfall adjustment (-\$0.250), Outsourcing Adjustment (-\$0.004), NWCF Rates (-\$0.016), Undistributed Reductions (-\$0.004).	
Schedule: N/A	
Technical: N/A	

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Exhibit R-2a, RDT&E Project Justification			Date: FEBRUARY 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/B. A. 5	Program Element Name & No. Navy Tactical Computer Resources 0604574N	Project Name and Number. Standard Hardware 21353	

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	29.945	1.964	2.297	2.424	3.074	2.947	3.084	3.154	CONT.	CONT.
RDT&E Articles Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

A. Mission Description and Budget Item Justification: Perform the system engineering necessary to verify Commercial-off-the-Shelf/Open System Architecture (COTS/OSA) technologies and products as suitable for introduction into the AN/UYQ-70(V) Advanced Display System product line.

FY 1998 ACCOMPLISHMENTS:

- (U) (\$0.261) Continued expansion of Computer Open Systems Implementation Program Computer Resources Information Base to increase viability of COTS/OSA technology into tactical systems via additional testing of commercial products.
- (U) (\$0.705) Continued investigating technology infusion into the AN/UYQ-70(V) to embrace a wider range of Navy surface applications using new COTS/OSA technology.
- (U) (\$0.215) Continued efforts to develop shipboard racks/enclosures and common tactical data systems.
- (U) (\$16.504) Adapted AN/UYQ-70(V) for submarine applications.
- (U) (\$5.658) Initiated Virtual Prototyping of legacy systems.
- (U) (\$6.602) Adapted AN/UYQ-70(V) for Marine Corps applications.

FY 1999 PLANS:

- (U) (\$0.950) Perform intensive study and testing of COTS/OSA technology that adheres to standards.
- (U) (\$0.500) Adapt these technologies and products to the Navy's tactical display/processor needs in the future.
- (U) (\$0.500) Meet Navy emerging surface, subsurface and airborne tactical display/processor requirements of the future.
- (U) (\$0.014) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

FY 2000 PLANS:

- (U) (\$1.000) Perform intensive study and testing of COTS/OSA technology that adheres to standards.
- (U) (\$0.597) Adapt these technologies and products to the Navy's tactical display/processor needs in the future.
- (U) (\$0.700) Meet Navy emerging surface, subsurface and airborne tactical display/processor requirements of the future.

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Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/B. A. 5	Program Element Name & No. Navy Tactical Computer Resources 0604574N	Project Name and Number. Standard Hardware 21353

B. Other Program Funding Summary: N/A

- (U) Related RDT&E
- PE 0603270N (ELECTRONIC WARFARE ADVANCED TECHNOLOGY)
- PE 0603382N (ADV COMBAT SYSTEM TECHNOLOGY)
- PE 0603502N (SHALLOW WATER MCM)
- PE 0603755N (COOPERATIVE ENGAGEMENT)
- PE 0604307N (AEGIS WEAPON SYSTEM MODS)
- PE 0604366N (STANDARD MISSILE IMPROVEMENTS)
- PE 0604372N (NEW THREAT UPGRADE)
- PE 0604755N (SHIP SELF DEFENSE)

C. Acquisition Strategy: N/A

D. Schedule Profile: N/A

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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/B.A. 5	PROGRAM ELEMENT NAME AND NUMBER Navy Tactical Computer Resources 0604574N	PROJECT NAME AND NUMBER Standard Hardware 21353

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	VARIOUS	VARIOUS	179.600	0		0				0	179.600	179.600
Ancillary Hardware Development												
Systems Engineering	VARIOUS	VARIOUS	14.000	1.177		1.500				CONT.	CONT.	CONT.
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			193.600	1.177		1.500				CONT.	CONT.	CONT.
Remarks:												
Development Support Equipment												
Software Development	VARIOUS	VARIOUS	32.373	0		0				0	32.950	32.950
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			32.373	0		0				0	32.950	32.950
Remarks:												

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Exhibit R-3 Cost Analysis		Date: FEBRUARY 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/B.A. 5	PROGRAM ELEMENT NAME AND NUMBER Navy Tactical Computer Resources 0604574N	PROJECT NAME AND NUMBER Standard Hardware 21353

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY99 Cost	FY99 Award Date	Fy00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	VARIOUS	VARIOUS	20.600	0.242		0.244				CONT.	CONT.	CONT.
Operational Test & Evaluation	VARIOUS	VARIOUS	15.090	0.170		0.178				CONT.	CONT.	CONT.
Tooling												
GFE												
Subtotal T&E			35.690	0.412		0.422				CONT.	CONT.	CONT.
Remarks:												
Contractor Engineering Support	VARIOUS	VARIOUS	10.700	0.300		0.300				CONT.	CONT.	CONT.
Government Engineering Support	VARIOUS	VARIOUS	25.000	0		0				0	25.000	N/A
Program Management Support												
Program Management Personnel												
Travel			1.477	0.075		0.075				CONT.	CONT.	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			37.177	0.375		0.375				CONT.	CONT.	CONT.
Remarks:												
Total Cost			298.840	1.964		2.297				CONT.	CONT.	CONT.
Remarks:												

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Exhibit R-2a, RDT&E Project Justification			Date: FEBRUARY 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/B. A. 5	Program Element Name & No. Navy Tactical Computer Resources 0604574N	Project Name and Number. Naval Warfare Tactical Data Base X2265	

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	0.536	1.170	1.003	1.030	1.074	1.223	1.254	1.432	CONT.	CONT.
RDT&E Articles Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

A. Mission Description and Budget Item Justification: The Naval Warfare Tactical Database (NWTDB) is an information management infrastructure project to solve data interoperability problems and implement DoD data architecture and standards in Navy. NWTDB is the data architecture component of Copernicus. NWTDB has developed management and engineering processes to define and translate information needs to automated systems and to manage changes resulting from new operational requirements or technology advances. Database integration, data standardization, and configuration management are supported by reverse engineering database structures and definitions into a common format to facilitate data interoperability problem identification and resolution. The management and engineering processes and authoritative database structures are documented in the NWTDB Standards Manual which is distributed to Navy C4ISR and combat system architects, system developers, reference database producers, other services and agencies, and selected foreign governments. The Data Analysis and Reconciliation Tool (DART), a Microsoft Windows-based application, is being evolved to support the full information management life cycle, i.e., linking databases and transfer formats to operational information requirements. DART supports systems documentation, configuration management, DoD standard data element generation, and requirements traceability. In August 1996, DASN C4I recommended the NWTDB process and DART to ASD C3I as a practical approach to solve data interoperability problems and support database integration, especially for the Global Command and Control System. NWTDB management process received OSD award in 1993. Management responsibilities are defined in OPNAVINST 9410.6 of 13 Jul 93, "NWTDB Requirements for Tactical Naval Warfare Systems," which implements DoD Directive 8320.1 of 26 Sep 91, "DoD Data Administration." OPNAVINST 9410.6 also specifies that Navy system developers and database producers will transition to NWTDB data standards and structures by the year 2000.

FY 1998 ACCOMPLISHMENTS:

- (U) (\$0.050) Developed TADIL screens and comparison to database data elements.
- (U) (\$0.040) Tested DART 2.0 and finalized build.
- (U) (\$0.040) Finalized DART 2.0 User's Guide for system architects, system developers, and data administrators.
- (U) (\$0.150) Continued to register core Naval Tactical Systems (emphasis on combat ID system databases) and changes to the NWTDB Standards Manual Version Three, including incorporation of IW links and nodes effort funded by OSD in FY97.
- (U) (\$0.090) Developed DART 3.0 Client/Server applications including on-line registration, configuration management and security features via Internet to support IT-21 implementation, and interface to the Modeling and Simulation Resource Repository System.
- (U) (\$0.045) Developed Year 2000 problem identification aids in DART.
- (U) (\$0.050) Developed a data requirements to mission measure of performance matrices to support the CIO mission.
- (U) (\$0.071) Provided technical support to implement DoD architecture and data standards process, including coordination with NATO GROUP 5.

FY 1999 PLANS:

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- (U) (\$0.090) Develop final DART 3.0 User's Guide.
- (U) (\$0.180) Continue to register Naval tactical systems, coordinating with FIWC/DRWG (emphasis on mission planning databases) and changes to the NWTDB Standards Manual – Version Four.
- (U) (\$0.164) Develop DART 3.1 configuration management and metadata warehousing features to support data fusion/pull.
- (U) (\$0.041) Expand TADIL screens and comparison to USMTF and database elements.
- (U) (\$0.070) Test DART 3.1 and finalize build.
- (U) (\$0.090) Develop DART 3.1 User's Guide.
- (U) (\$0.170) Collect data and prototype in DART a capability linking systems data requirements to mission traceability to support CIO assessment.
- (U) (\$0.100) Develop NWTDB Standards Manual – Version Four as an on-line publication.
- (U) (\$0.135) Expand Naval C4I Engineering Data models for combat ID and mission planning.
- (U) (\$0.100) Technical support to implement DoD architecture and data standards process, including coordination with NATO GROUP 5.
- (U) (\$0.030) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

- FY 2000 PLANS:
- (U) (\$0.099) Develop DART 3.2 and user guide to include HTML online publishing capability.
- (U) (\$0.210) Continue to register Naval tactical systems with emphasis on track data and data link message sets as coordinated with FIWC/DRWG.
- (U) (\$0.280) Participate with CRWG to identify and resolve selected data fill/data format issues. Prioritize issues with recommendations to program office on which ones to address.
- (U) (\$0.170) Establish procedures for real-time standards management on the Worldwide Web. Publish Version Six online, with ongoing continuing updates.
- (U) (\$0.124) Enhance DART with a capability for linking systems data requirements to mission traceability to support CIO assessment.
- (U) (\$0.120) Act as liaison to DISA data standardization efforts to promote Navy standards and submit data models/data elements as candidate DoD standards.

- B. Other Program Funding Summary: N/A
(U) Related RDT&E: N/A

- C. Acquisition Strategy: N/A

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/B. A. 5	Program Element Name & No. Navy Tactical Computer Resources 0604574N	Project Name and Number. Naval Warfare Tactical Data Base X2265

D. Schedule Profile: N/A

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Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Systems Engineering	BPI	GRCI, Hanahan, SC	0.666	0.465	10/98	0.389	10/99			CONT.	CONT.	CONT.
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.666	0.465		0.389				CONT.	CONT.	CONT.
Remarks:												
Development Support Equipment												
Software Development	BPA	GRCI, Hanahan, SC	0.995	0.620	10/98	0.532	10/99			CONT.	CONT.	CONT.
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Project Development			0.995	0.620		0.532				CONT.	CONT.	CONT.
Remarks:												

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Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	Fy00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E												
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	BPA	BAH, San Diego, CA	0.065	0.030	10/98	0.030	10/99			CONT.	CONT.	CONT.
Program Management Support	FFP	PRC, San Diego, CA	0.060	0.030	10/98	0.030	10/99			CONT.	CONT.	CONT.
Travel	N/A	SPAWAR San Diego, CA	0.061	0.025		0.022				CONT.	CONT.	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.186	0.085		0.082				CONT.	CONT.	CONT.
Remarks:												
Total Cost			1.847	1.170		1.003				CONT.	CONT.	CONT.
Remarks:												

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